

Original
articleBehavioural and demographic characteristics of
attenders at two genitourinary medicine clinics in
England

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Objective: To investigate how attenders with sexually transmitted disease (STD) differ from the general population with respect to sexual behaviour, and to identify which attenders at genitourinary medicine (GUM) clinics are at particular behavioural risk for acquiring STD.

Design: Multicentre cross sectional survey.

Setting: Two genitourinary medicine clinics, one in London and one in Sheffield.

Subjects: 20 516 patients attending the two clinics over an 18 month period.

Main outcome measures: Behavioural and demographic characteristics and clinical diagnoses were recorded for each patient.

Results: 8862 patients, in whom 12 506 diagnoses were made, were seen in the Sheffield clinic, and 11 654 patients, in whom 20 243 diagnoses were made, were seen in the London clinic. When compared with the reported results from a general population survey, there were higher proportions of clinic attenders reporting two or more sexual partners in the preceding 12 months ($p < 0.001$), and a higher proportion of males reporting homosexual contact (13% compared with 1%, $p < 0.001$). Only age and number of sexual partners in the past 12 months were significantly associated with acute STDs for each sex in each clinic. Acute STDs tended to occur with greater frequency in the younger age groups, peaking among 16-19 year olds, particularly among females.

Conclusions: The results have confirmed that patients with STDs exhibit higher risk sexual behaviour than the general population, and have highlighted the problem of continuing high risk behaviour among younger attenders, particularly younger homosexual men. This study has demonstrated that among GUM clinic attenders age and number of sexual partners are key risk factors for the acquisition of an acute STD. The results of this survey also indicate, however, that half of the females and more than one quarter of males with acute STDs reported only one sexual partner in the past 12 months, suggesting that health education messages should point out that it is not only those who have multiple recent sexual partners, or who have recently changed sexual partner, that are at risk of STD, including HIV.

(*Genitourin Med* 1997;73:457-461)

Keywords: STDs; behaviour; genitourinary medicine clinics

Background

Sexually transmitted diseases (STD) remain among the most common causes of infectious disease morbidity in England and Wales¹ and are identified as a key area for disease reduction in the *Health of the Nation* white paper.² There has been a shift in the aetiological mix of STDs over the past 20 years, from a predominance of bacterial diseases such as gonorrhoea and syphilis, to viral diseases such as human immunodeficiency virus (HIV) infection, genital herpes, and genital warts.³ In addition, there are accumulating data on the widespread distribution of asymptomatic chlamydia infections.^{4,5} With this shift comes the need to give added emphasis to primary prevention through health education and disease avoidance, rather than mainly rely upon secondary and tertiary prevention through treatment and partner notification. There is growing evidence that to be effective, primary prevention has to be targeted and relevant.⁶ High quality surveillance data, including demographic and behavioural characteristics of patients, are required to inform targeted primary prevention initiatives.

Genitourinary medicine (GUM) clinics in Britain are relatively efficient in selectively attracting members of the population with high risk sexual lifestyles.⁷ Statistical returns (KC60) completed in these clinics represent the major source of information on the frequency and distribution of STDs in England. These returns of aggregate data include information on diagnosis but not on sexual behaviour and risk factors for STD acquisition, other than age, sex and, for some diagnoses, sexual orientation, and do not indicate how many patients have multiple infections, diagnosed either at one visit or over the course of several visits.

This paper describes the first results from a pilot sentinel surveillance study that was developed in response to the need for epidemiological data not provided by routine surveillance mechanisms. The sentinel system is intended to augment existing surveillance data from GUM clinics, providing demographic and behavioural information on individual patient episodes, to inform control and prevention strategies. This paper addresses the questions of:

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Accepted for publication
18 June 1997

Table 1 Data collected for each clinic episode

(1)	Clinic
(2)	Sex
(3)	Sexual preference
(4)	Age group
(5)	Ethnic group
(6)	Diagnosis
(7)	Number of sexual partners in past year
(8)	Sex abroad with someone other than regular partner in last year and ever
(9)	Number of sexual partners (other than regular partner) abroad in past year
(10)	Commercial sex worker
(11)	Higher risk sexual partner in past year and ever (HIV positive, homo/bisexual male, injecting drug user, commercial sex worker)
(12)	Past history of sexually transmitted disease (either reported by patient or as known by attending clinician)
(13)	Injecting drug use ever

(a) how many attenders with sexually transmitted diseases are seen in GUM clinics (compared with how many diagnoses are made),

(b) how attenders with sexually transmitted disease differ from the general population with respect to sexual behaviour,

(c) which attenders at GUM clinics are at particular behavioural risk for acquiring sexually transmitted disease.

Methods

Three collaborating centres were selected for the pilot, two in London and one in Sheffield. The criteria for selection were: a high clinic attendance rate, willingness to participate in the three year pilot study, and willingness to pilot an electronic data collection system.

The project was coordinated by a steering committee made up of representatives of the collaborating clinics, the Public Health Laboratory Service, and the Department of Health. A core dataset was defined (table 1). The selection criteria for items for the dataset included: validity as indicators of behaviour, consistency with other surveys of sexual behaviour, protection of patient confidential-

ity, feasibility of data collection, and acceptability to patients and clinic staff.

The dataset consists of demographic details, behavioural factors, and diagnostic information. Demographic and diagnostic information is taken from the clinic records systems, while behavioural information is collected on special proformas which are completed by the attending doctor at each new patient episode. All information collected as part of this study is gathered routinely during consultations in GUM clinics. All information was anonymised before transfer to the coordinating centre at CDSC. The chairmen of local research ethics committees were informed of this enhanced surveillance project.

The following diagnoses were classified as "acute STDs" for the purposes of some of the analyses, these diagnoses being most likely to indicate recent acquisition of a sexually transmitted disease through sexual intercourse: infectious syphilis, all gonorrhoea, all chlamydia, first attack of genital herpes, first attack of genital warts, trichomoniasis, antigen positive hepatitis B, non-specific urethritis, scabies, and pediculosis.

Univariate and multivariable analyses of the results were undertaken, using STATA software.⁸ Presence of an acute STD was taken as the dependent variable in the multiple logistic regression analyses. Significant interactions with sex and clinic were found for many risk factors, and therefore separate logistic regression models were also estimated for males and females at the two clinics.

Results

The results presented are based on the data collected during the first 18 months of the study, during 1995 and 1996, from Sheffield, and from St Thomas's Hospital, London. No data for this period of the study were available from the second clinic in London, owing to relocation and reorganisation of the clinic over this period. The data include information on 8862 patients seen at Sheffield, and 11 654 patients seen at St Thomas's Hospital. The patients seen at Sheffield presented with 10 176 separate clinical episodes, and were assigned 12 506 diagnoses: 67% of patients were assigned one diagnosis during the study period, 23% two diagnoses, 8% three or more diagnoses, and for 2% no diagnostic information was available. The patients seen at St Thomas's Hospital presented with 15 434 separate clinical episodes, and were assigned 20 243 diagnoses: 49% of patients were assigned one diagnosis during the study period, 35% two diagnoses, and 16% three or more diagnoses. There were 2421 patients who attended the Sheffield clinic and 3839 who attended St Thomas's Hospital with acute STDs during the study period.

The general demographic characteristics of the attenders are described in table 2. There was a greater proportion of attenders aged 25 years or over at St Thomas's Hospital than at Sheffield (72% compared with 63%, $p < 0.001$), a greater proportion of the men at

Table 2 Characteristics of patients attending the two study clinics

	London	Sheffield
Total diagnoses	20 243	12 506
Total attenders	11 654	8 862
Attenders with acute STD*	3 839 (33%)	2 421 (27%)
Male homo/bisexual attenders—total	911	392
< 25 years	163 (18%)	86 (22%)
≥ 25 years	748 (82%)	306 (78%)
Unknown	0	0
Male heterosexual attenders—total	5 056	3 985
< 25 years	1 088 (22%)	1 186 (30%)
≥ 25 years	3 961 (78%)	2 798 (70%)
Unknown	7	1
Female heterosexual attenders—total	5 527	4 398
< 25 years	1 977 (36%)	1 938 (44%)
≥ 25 years	3 534 (64%)	2 458 (56%)
Unknown	16	2
Other exposure category attenders†—total	160	87
Ethnic group		
White	6 347 (54%)	7 861 (89%)
Afro-Caribbean	4 742 (41%)	566 (6%)
Other/unknown	565 (5%)	435 (5%)
Ethnic group		
Sexual partners in past		
12 months		
0–2	8 754 (75%)	6 829 (77%)
≥ 3	2 900 (25%)	2 025 (23%)
Unknown	0	8
Past history of STD		
Yes	5 269 (45%)	2 951 (33%)

*See methods for definition of acute STD.

†Includes female homosexuals and attenders of unknown sexual preference.

Table 3 Comparison of sexual behaviours of all clinic attenders, clinic attenders with an acute STD, and the general population

Sexual behaviour	Attenders with acute STD	All GUM clinic attenders	General population
Heterosexual partners in past year			
Males*			
0	1.4%	3.2%	13.1%
1	27.7%	34.9%	73.0%
2	29.6%	29.2%	8.2%
3-4	23.7%	20.1%	4.1%
5+	17.6%	12.6%	1.5%
Females*			
0	1.2%	2.7%	13.9%
1	48.0%	53.8%	79.4%
2	30.1%	26.7%	4.8%
3-4	14.8%	11.5%	1.6%
5+	6.0%	5.3%	0.4%
Proportion of men reporting sex with another man in past year	9.9%	12.5%	1.1%
Proportion of males reporting more than 2 heterosexual partners in past year†			
< 25 years	46.6%	39.4%	12.6%
≥ 25 years	33.4%	25.7%	3.4%
Proportion of females reporting more than 2 heterosexual partners in past year†			
< 25 years	24.9%	20.4%	5.5%
≥ 25 years	12.1%	11.1%	0.9%
Contact with commercial sex worker past 12 months*	2.3%	2.4%	1.8% (last 5 years)
Injecting drug use ever‡	1.4%	1.7%	0.6%

*All GUM clinic attenders differ significantly from the general population, $p < 0.001$.

†Attenders aged less than 25 years with acute STD more likely to report three or more sexual partners in the past year than all clinic attenders ($p < 0.001$) or the general population ($p < 0.001$).

‡Clinic attenders reported higher rates of injecting drug use than the general population ($p < 0.001$).

Clinic attenders with acute STDs also reported higher rates of injecting drug use than the general population but lower rates than all clinic attenders ($p = 0.03$).

Table 4 Risk factors for acute STDs in GUM clinic attenders: univariate associations between acute STDs and risk factors

Variable	Acute STD (n)	% Acute	χ^2	p Value
Clinic				
Sheffield	2421/8862	27%		
St Thomas's	3839/11 654	33%	75.1	< 0.001
Male	3965/10 399	38%		
Female	2295/10 117	23%	576.9	< 0.001
Age group				
25 or over	3896/13 975	28%		
20-24	1726/4955	35%		
16-19	594/1469	40%	159.1	< 0.001
15 or under	33/91	36%		
Sexual preference				
Heterosexual	5817/18 966	31%		
Male homo/bisexual	394/1303	30%	0.1	0.74
Partners in last 12 months				
0-2	4231/15 583	27%		
3 or more	2028/4925	41%	347.2	< 0.001
Sexual contact abroad with non-regular partner?				
No	5614/18 562	30%		
Yes	646/1954	33%	6.6	0.01
Past history of STD?				
No	3510/12 296	29%		
Yes	2750/8220	33%	56.0	< 0.001
Sex with CSW in last 12 months?				
No	6111/20 044	30%		
Yes	149/472	32%	0.3	0.62
Ever injected drugs?				
No	6170/20 160	31%		
Yes	90/356	25%	4.7	0.03

Table 5 Adjusted risk factors for acute STD from multiple logistic regression model for all patients (n = 20 482)

Variable	Number	Odds ratio (adjusted)	95% CI	p Value
Clinic				
Sheffield	8 851	1		
St Thomas's	11 631	1.36	1.27-1.44	< 0.001
Males	10 385	2.35	2.20-2.52	< 0.001

Many interactions were found between covariates in the above model. In particular risk factors varied significantly by sex and clinic, so separate logistic regression models were estimated for males and females at the two clinics.

St Thomas's Hospital were homosexual or bisexual (15% compared with 9%, $p < 0.001$), and more were of non-white ethnicity (41% compared with 6%, $p < 0.001$).

All attenders and attenders with acute STDs were compared with the random sample general population surveyed in the national survey of sexual attitudes and lifestyles in 1990 and 1991 (table 3). Attenders at the two clinics in this survey reported more sexual partners in the past 12 months than those in the general population ($p < 0.001$). Almost half of the heterosexual males and one quarter of heterosexual females aged less than 25 years with acute STD reported three or more sexual partners in the past year, compared with 37% and 19% respectively in all clinic attenders ($p < 0.001$) and 13% and 6% respectively in the general population ($p < 0.001$). A much higher proportion of men attending the clinics reported sexual contact with another man in the past 12 months than was reported in the general population survey (13% compared with 1%, $p < 0.001$). Contact with commercial sex workers in the past year was reported by 2.3% of clinic attenders compared with the general population rate of 1.8% in the past 5 years ($p < 0.001$). Clinic attenders reported higher rates of injecting drug use than the general population (1.7% compared with 0.6%, $p < 0.001$). Clinic attenders with acute STDs also reported higher rates of injecting drug use (1.4%) than the general population (0.6%) but lower rates than all clinic attenders (1.7%, $p = 0.03$).

The results of univariate analysis of the association between acute STD and various risk factors are presented in table 4. The following factors were found to be strongly associated with presence of an acute STD: attendance at St Thomas's Hospital rather than Sheffield, male sex, younger age, reporting three or more sexual partners in the past 12 months, and past history of STD. In addition, a weaker association was found between sexual contact abroad with a non-regular partner and presence of an acute STD. Risk of having an acute STD did not vary significantly with sexual preference (heterosexual versus male homo/bisexual), and a history of injecting drug use was associated with a decreased risk of acute STD.

In the multiple logistic regression model for all attenders combined males were twice as likely as females to have an acute STD, and attenders at St Thomas's Hospital were more likely than those at Sheffield to have an acute STD (table 5). In the separate multiple logistic regression analysis models for males and females at each of the two clinics, only age and number of sexual partners in the past 12 months were significantly associated with acute STD for each sex in each clinic (table 6). Acute STDs tended to occur with greater frequency in the younger age groups, peaking in the 16-19 year olds, particularly among females. A history of three or more sexual partners in the past 12 months was more strongly associated with acute STD for males than for females at each clinic. In the regression analysis, male heterosexuals were at higher risk of having an acute STD than were male homo/bisexuals attending each clinic. Acute STDs were associated with a history of

Table 6 Adjusted risk factors for acute STD in males and females for St Thomas's and Sheffield separately

Variable	St Thomas's				Sheffield			
	Males (n = 6008)		Females (n = 5623)		Males (n = 4377)		Females (n = 4474)	
	OR	p Value	OR	p Value	OR	p Value	OR	p Value
Age group								
≥ 25	1		1		1		1	
20–24	1.27		1.66		1.43		2.45	
16–19	1.55		2.86		1.30		3.51	
≤ 15	0.94	< 0.001	2.52	< 0.001	1.52	< 0.001	2.96	< 0.001
Sexual preference								
Heterosexual	1		1		1		1	
Male homo/bisexual	0.49				0.50			
Other*	0.92	< 0.001	0.63	0.09	1.14	< 0.001	0.44	0.01
≥ 3 partners in past 12 months	1.70	< 0.001	1.36	0.001	1.75	< 0.001	1.26	0.01
Sex abroad	1.08	0.36	0.59	0.002	0.94	0.57	0.84	0.21
Past STD	1.62	< 0.001	1.12	0.11	1.16	0.04	1.04	0.59
Sex with CSW past 12 months	0.56	< 0.001	1.19	0.77	0.55	0.05	0.54	0.42
Injected drugs	0.58	0.006	0.79	0.50	0.82	0.38	0.76	0.41

*Includes female homosexuals and attenders of unknown sexual preference.

previous STD among men but not among women in each clinic. Men in each clinic who reported contact with a commercial sex worker in the previous 12 months were significantly less likely to have an acute STD than were those who did not report this risk factor. There was also a lower risk at St Thomas's Hospital, but not at Sheffield, of acute STD among men who had ever injected drugs, compared with those that did not give such a history. Women from St Thomas's Hospital who had had sex with a non-regular partner abroad in the past 12 months were less likely than other women from St Thomas's Hospital to have an acute STD. No association was observed between this risk factor and acute STD among men at St Thomas's Hospital or among men or women at Sheffield.

The percentage of attenders reporting three or more sexual partners was highest among homo/bisexual males (61% at St Thomas's Hospital, 50% at Sheffield), lower among heterosexual males (31% at St Thomas's Hospital, 27% at Sheffield), and lowest among heterosexual females (13% at St Thomas's Hospital, 17% at Sheffield) (table 3). At both clinics, attenders aged less than 25 years were more likely to report three or more sexual partners in the past 12 months (29% in both clinics) than were older attenders (23% at St Thomas's Hospital, 19% at Sheffield). The highest proportion of attenders reporting three or more sexual partners in the past 12 months was seen among young homo/bisexual men in both clinics.

A higher proportion of homo/bisexual male attenders than heterosexual male attenders were tested for HIV infection (46% compared with 30%, OR 1.95, $p < 0.001$). Furthermore, a higher proportion of homo/bisexual males than heterosexual males tested for HIV infection were recorded as not having an STD (acute or otherwise) at the time of testing (70% compared with 58%, OR 1.50 $p < 0.001$).

At Sheffield, sexual intercourse abroad with a non-regular partner during the previous 12 months was reported by 17% of homo/bisexual males, 10% of heterosexual males, and 8% of heterosexual females (table 5). At St

Thomas's Hospital, sexual intercourse abroad with a non-regular partner during the previous 12 months was reported by 23% of homo/bisexual males, 12% of heterosexual males, and 6% of heterosexual females.

Discussion

The pilot survey has produced a unique dataset based on over 20 000 patients at two large GUM clinics, one in London and the other in the middle of England. The survey has provided a more detailed picture of the distribution of infections and sexual behaviour among patients attending GUM clinics than is available from existing routine surveillance data. The results have demonstrated that patients with STDs exhibit higher risk sexual behaviour than the general population, and have highlighted continuing high risk behaviour among younger attenders, particularly younger homosexual men. It should be noted that because there is considerable variation in the demographic and behavioural mix of attenders at different GUM clinics, particularly in London, the data from St Thomas's Hospital cannot be interpreted as representative of all London clinics. It is also the case that the general population survey used as a comparator for this study was conducted in 1990–1, but it is highly unlikely that any changes in the frequency and distribution of sexual behaviour between then and 1995–6 will have been of such magnitude as to affect the significance of differences between the general population and clinic attenders as reported in this study.

This study has demonstrated that among GUM clinic attenders age and number of sexual partners are key risk factors for the acquisition of an acute STD. The results also suggest that among male GUM clinic attenders homo/bisexual sexual preference, contact with a commercial sex worker in the past 12 months, and history of injecting drugs (at St Thomas's Hospital but not at Sheffield), are associated with a reduced risk of acquisition of an acute STD. These observations may reflect some reporting bias due to normative pressures on attenders, in the face of HIV prevention mes-

sages, not to admit to such behaviours. The results might also indicate that attenders reporting these behaviours more frequently adopt sexual practices that reduce the risk of transmission of STDs, such as the regular use of condoms. An alternative explanation could be that men reporting homo/bisexual sexual preference, contact with a commercial sex worker in the past 12 months, or history of injecting drugs, and women who have had a recent sexual partner abroad are more likely to attend for routine screening for HIV or other STDs, in the absence of symptoms. Some evidence for this comes from the observation in this study that the proportion of attenders who were tested for HIV infection but did not have an STD ("acute" or otherwise) was higher among homo/bisexual males than among heterosexual males.

Past history of STD was found to be a risk factor for acquisition of an acute STD among males but not among females attending the two clinics. This association may reflect differences in behaviour between males with a past history of STD and those without such a history, or may reflect differences in the prevalence of STDs in the sexual networks within which different groups of clinic attenders interact. In either case, the results suggest that there is scope for further reduction in STD incidence through counselling of patients.

The results indicate high levels of behaviour among some homo/bisexual males likely to put them at continued risk of HIV transmission. At least 50% of the homo/bisexual males aged under 25 years attending the two clinics reported having had three or more sexual partners in the UK during the previous 12 months. The type of sexual contact between homo/bisexual males and their partners was not recorded in this study, and therefore the proportion of contacts that were limited to encounters within which only safe sex was practised is not known. The risk of acquisition of an acute STD was, however, significantly associated with higher numbers of sexual partners for homo/bisexual males, suggesting that in many cases unsafe sex was practised. The high proportion of homo/bisexual men reporting sexual contact abroad with a non-regular partner also gives cause for concern, and warrants further investigation into where these contacts are occurring and from where the

sexual partners originate, and may indicate a need for health promotion intervention.

Johnson *et al* have recently demonstrated that the sexual behaviours of attenders at GUM clinics differed markedly from those of non-attenders.⁷ They also noted that at a population level clinics only see a minority of those reporting risk markers for STD transmission. This study has similarly demonstrated that, taken as a whole, attenders at GUM clinics report behaviours likely to place them at risk of exposure to an STD more frequently than the general population, and that for patients with acute STDs the rates of partner acquisition appear to be higher still. The results of this survey also indicate, however, that the majority of heterosexual attenders with acute STDs at each clinic reported no more than two partners in the past 12 months. Half of the females and more than one quarter of males with acute STDs reported only one sexual partner in the past 12 months, and as such may not be perceived either by themselves or by health service providers, as being at particular risk for acquiring an STD, including HIV. This finding suggests that health education messages should point out that it is not only those who have multiple recent sexual partners, or who have recently changed sexual partner, that can be at risk of STD.

This project was funded by the Department of Health. The steering committee are grateful to all staff in the collaborating clinics for the time and effort devoted to setting up and running the project.

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